



**Solid State Devices, Inc.**

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**SPT6233 – SPT6235  
Series**

**5 AMP  
250 – 350 Volts  
NPN Transistor**

**DESIGNER'S DATA SHEET**

**Part Number / Ordering Information** <sup>1/</sup>

SPT6233 \_ \_ \_ \_  
 SPT6234 \_ \_ \_ \_  
 SPT6235 \_ \_ \_ \_

**Screening** <sup>2/</sup> \_ = Not Screen  
 TX = TX Level  
 TXV = TXV Level  
 S = S Level

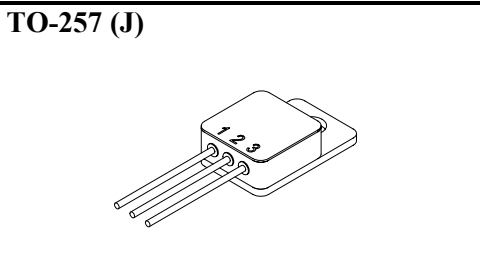
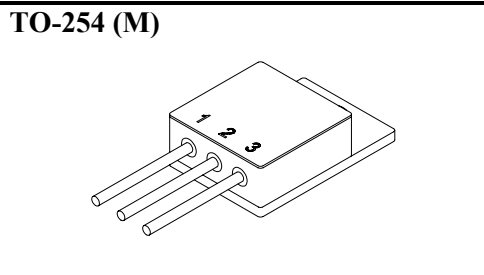
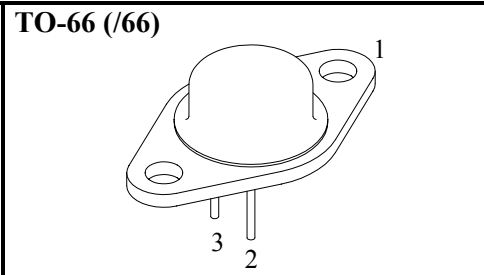
**Lead Bend** <sup>3/4/</sup> \_ = Straight Leads  
 UB = Up Bend  
 DB = Down Bend

**Pin Out Configuration** <sup>5/</sup> \_ = Normal  
 R = Optional

**Package** <sup>3/</sup> /66 = TO-66  
 M = TO-254  
 J = TO-257

- Features:**
- Switching Power Transistor
  - Isolated and Non-isolated Packages Available
  - High Power Dissipation: Up to 50W
  - Rugged SOA
  - Also Available in TO-39, TO-111, and Isolated TO-59, Consult Factory
  - Replacement for 2N6233 through 2N6235
  - TX, TXV, S-Level Screening Available

Maximum Ratings		Symbol	Value	Units
Collector – Emitter Voltage	SPT6233	V <sub>CEO</sub>	225	Volts
	SPT6234		275	
	SPT6235		325	
Collector – Base Voltage	SPT6233	V <sub>CBO</sub>	250	Volts
	SPT6234		300	
	SPT6235		350	
Emitter – Base Voltage		V <sub>CBO</sub>	6	Volts
Continuous Collector Current		I <sub>C</sub>	5	Amps
Power Dissipation @ TC = 25°C	TO-66 (/66)	P <sub>D</sub>	50	W
	TO-254 (M)		39	
	TO-257 (J)		33	
Operating & Storage Temperature		Top & Tstg	-65 to +200	°C
Maximum Thermal Resistance Junction to Case	TO-66 (/66)	R <sub>θJC</sub>	3.2	°C/W
	TO-254 (M)		4.5	
	TO-257 (J)		5.3	



**NOTE:** All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.

**DATA SHEET #: TR0029C**



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**SPT6233 – SPT6235  
 Series**

Electrical Characteristics <sup>6/</sup>		Symbol	Min	Typ	Max	Units
Collector – Emitter Sustaining Voltage (I <sub>C</sub> = 20 mA)	SPT6233 SPT6234 SPT6235	BV <sub>CEO</sub>	225 275 325	— — —	— — —	Volts
Emitter – Cutoff Current	V <sub>BE</sub> = 6 V	I <sub>EBO</sub>	—	—	100	uA
Collector – Cutoff Current	SPT6233, V <sub>CB</sub> = 250 V SPT6234, V <sub>CB</sub> = 300 V SPT6235, V <sub>CB</sub> = 350 V	I <sub>CBO</sub>	—	—	100	uA
Collector – Cutoff Current	SPT6233, V <sub>CE</sub> = 225 V SPT6234, V <sub>CE</sub> = 275 V SPT6235, V <sub>CE</sub> = 325 V	I <sub>CEO</sub>	—	—	1.0	mA
Collector – Cutoff Current (V <sub>BE</sub> = -1.5 V, T <sub>c</sub> = 150 °C)	SPT6233, V <sub>CE</sub> = 250 V SPT6234, V <sub>CE</sub> = 300 V SPT6235, V <sub>CE</sub> = 350 V	I <sub>CEX</sub>	—	—	1.0	mA
DC Forward Current Transfer Ratio *	V <sub>CE</sub> = 5V, I <sub>C</sub> = 0.1A V <sub>CE</sub> = 5V, I <sub>C</sub> = 1A V <sub>CE</sub> = 5V, I <sub>C</sub> = 3A	h <sub>FE</sub>	25 15 10	— — —	— 125 —	—
Collector – Emitter Saturation Voltage *	I <sub>C</sub> = 5A, I <sub>B</sub> = 1A I <sub>C</sub> = 1.0A, I <sub>B</sub> = 0.1A	V <sub>CE(SAT)</sub>	— —	— —	2.5 0.5	Volts
Base – Emitter Saturation Voltage *	I <sub>C</sub> = 5A, I <sub>B</sub> = 1A I <sub>C</sub> = 1.0A, I <sub>B</sub> = 0.1A	V <sub>BE(SAT)</sub>	— —	— —	2.0 1.0	Volts
Base – Emitter On Voltage *	I <sub>C</sub> = 1A, V <sub>ce</sub> = 5 V	V <sub>BE(ON)</sub>	—	—	1.0	Volts
Safe Operating Area (tp = 1 sec)	V <sub>CE</sub> = 10V V <sub>CE</sub> = 45V	SOA	5.0 1.0	— —	— —	Amp
Frequency Transition	V <sub>CE</sub> = 10V, I <sub>C</sub> = 0.25A	f <sub>T</sub>	20	—	—	MHz
Output Capacitance	V <sub>CE</sub> = 10V, f = 1MHz	c <sub>ob</sub>	—	—	250	pF
Rise Time (V <sub>CC</sub> = 200V, I <sub>C</sub> = 1.0A, I <sub>B1</sub> = 0.1A)		t <sub>r</sub>	—	0.5	0.75	μsec
Storage Time (V <sub>CC</sub> = 200V, I <sub>C</sub> = 1.0A, I <sub>B1</sub> = I <sub>B2</sub> = 0.1A)		t <sub>s</sub>	—	3.5	5.0	μsec
Fall Time (V <sub>CC</sub> = 200V, I <sub>C</sub> = 1.0A, I <sub>B1</sub> = I <sub>B2</sub> = 0.1A)		t <sub>f</sub>	—	0.5	0.8	μsec

**NOTES:**

\* Pulse Test: Pulse Width = 300μsec, Duty Cycle = 2%

1/ For Ordering Information, Price, and Availability Contact Factory.

2/ Screening per MIL-PRF-19500

3/ For Package Outlines Contact Factory.

4/ Up and Down Bend Configurations are Available for 'M' (TO-254) and 'J' (TO-257) Packages Only.

5/ Optional Pin Out Configurations are Available for 'M' (TO-254) and 'J' (TO-257) Packages Only.

6/ Unless Otherwise Specified, All Electrical Characteristics @25°C.

**Available Part Numbers:**

SPT6233/66; SPT6233M; SPT6233J; SPT6233MR; SPT6233JR  
 SPT6234/66; SPT6234M; SPT6234J; SPT6234MR; SPT6234JR  
 SPT6235/66; SPT6235M; SPT6235J; SPT6235MR; SPT6235JR

**PIN ASSIGNMENT (Standard)**

Package	Collector	Emitter	Base
TO-66 (/66)	Case (1)	Pin 2	Pin 3
TO-254 (M)	Pin 1	Pin 2	Pin 3
TO-257 (J)	Pin 1	Pin 2	Pin 3

**PIN ASSIGNMENT (Optional)**

Package	Collector	Emitter	Base
TO-254 (MR)	Pin 2	Pin 3	Pin 1
TO-257 (JR)	Pin 2	Pin 3	Pin 1